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Knowledge gaps and radiation exposure concerns: time for a revamp of radiation training structures for trainee surgeons

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Background: The aim of this study is to assess surgical trainee knowledge relating to occupational radiation exposure and safety, and prior attendance at radiation protection training. We also assessed compliance with the use of personal protective equipment (PPE) and attitudes and concerns relating to radiation exposure.

Methods: This cross-sectional quantitative study was conducted using a questionnaire-based survey through Qualtrics, an online software program. The survey consisted of three sections addressing trainee demographics, radiation training history & knowledge and attitudes and concerns towards exposure to radiation. Tertiary care hospitals located in Ireland. Study participants included surgical trainees in six surgical disciplines regularly exposed to occupational radiation. Trainees of varying experience levels in trauma and orthopaedic surgery, urological surgery, vascular surgery, plastic & reconstructive, general surgery and ear, nose and throat surgery were invited to complete the survey, distributed by the National Surgical Training Office at the Royal College of Surgeons in Ireland.

Results: There were 79 respondents to the survey (70% response rate) from 112 invited trainees. Radiation knowledge was poor with less than 10% of participants meeting the threshold to pass the knowledge survey. One-fifth of respondents had not attended a formal radiation safety course and 40% (31/78) had no prior fluoroscopic training. Concerns about the long-term effects of radiation exposure on fertility were reported in 62.7% (42/67) of respondents. Despite this, compliance with the use of PPE was low, with 8.8% (6/68) reporting full compliance with

dosimeter use, 61.8% (42/68) compliance with thyroid shield use and only 13.2% compliance with eye protection (9/68). Further radiation safety training was requested by over 85% (57/67) of trainees.

Conclusions: This study demonstrates significant knowledge gaps and poor compliance with PPE use amongst surgical trainees. With a strong surgical trainee desire to seek out further radiation safety training, we propose a revamp of traditional training structures to deliver a modern, interactive, online national radiation safety training course.

Keywords: Occupational radiation exposure; radiation education; radiation protection; surgical radiation knowledge; surgical trainee

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Footnote

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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